

Claims

1. A process for producing alkyl and aryl lithium compounds by reacting lithium metal with alkyl or aryl halides in a solvent, characterised in that the concentration of the alkyl/aryl halide and the alkyl/aryl lithium compound is determined by inline measurement in the reactor by means of IR spectroscopy.
2. A process according to claim 1, characterised in that an IR spectrometer in the wavelength range from 600 to 4000 cm^{-1} is used.
3. A process according to claim 1 or 2, characterised in that an absolute total reflection cell (ATR cell) with a diamond sensor and high sensitivity is used as the IR probe, wherein the ATR cell is immersed directly in the reaction mixture and is specially sealed, the measurement set-up being explosion-proof and being scoured with an inert gas, such as argon or nitrogen.
4. A process according to one of claims 1 to 3, characterised in that the complete measurement set-up is equipped with a safety valve to prevent the release of pyrophoric material in the event of mechanical damage to the sensor.
5. A process according to one of claims 1 to 4, characterised in that to ensure a stable measurement process the instrument is thermostatically controlled and is protected against external electrical fluctuations.
6. A process according to one of claims 1 to 5, characterised in that aliphatic (such as methyl lithium, ethyl lithium, propyl lithium, butyl lithium including all isomers, hexyl lithium, octyl lithium) or aromatic lithium alkyl compounds (such as phenyl lithium, tolyl lithium, mesityl lithium) are obtained.

7. A process according to one of claims 1 to 6, characterised in that aliphatic hydrocarbons (such as pentane, hexane, heptane, octane) and cycloaliphatic hydrocarbons (such as cyclopentane, cyclohexane or methyl cyclohexane) or aromatic hydrocarbons (such as toluene, xylene or mesitylene) or ethers (such as diethyl ether, diisopropyl ether, dibutyl ether, methyl tert-butyl ether, tetrahydrofuran, 2-methyl tetrahydrofuran) or mixtures thereof are used as the solvent.
8. A process according to one of claims 1 to 7, characterised in that the process is performed under normal pressure or in vacuo or in the overpressure range.
9. A process according to one of claims 1 to 8, characterised in that the process is performed at temperatures from -120°C to 100°C